CONTENTS OF VOLUME 21

Number 1

Editorial
M. M. Benarie — 1 The limits of air pollution modelling

General Papers
D. J. Cooper, W. Z. de Mello, W. J. Cooper, R. G. Zika, E. S. Saltzman, J. M. Prospero and D. L. Savoie — 7 Short-term variability in biogenic sulphur emissions from a Florida *Spartina alterniflora* marsh

J. F. van der Wal, R. Ebens and J. Tempelman — 13 Man-made mineral fibres in homes caused by thermal insulation

B. Georgi, H. Horvath, C. Norek and I. Kreiner — 21 Use of rare earth tracers for the study of diesel emissions in the atmosphere

M. R. Beychok — 29 A data base of dioxin and furan emissions from municipal refuse incinerators

M. Lenner — 37 Nitrogen dioxide in exhaust emissions from motor vehicles

D. Martin, C. Mithieux and B. Strauss — 45 On the use of the synoptic vertical wind component in a transport trajectory model

J. A. King, F. H. Shair and D. D. Reible — 53 The influence of atmospheric stability on pollutant transport by slope winds

J. A. Fay, D. Golomb and S. Kumar — 61 Anthropogenic nitrogen oxide transport and deposition in eastern North America

R. R. Draxler — 69 One year of tracer dispersion measurements over Washington, D.C.

S. E. Gryning, A. A. M. Holtslag, J. S. Irwin and B. Sivertsen — 79 Applied dispersion modelling based on meteorological scaling parameters

D. D. Baldocchi, B. B. Hicks and P. Camara — 91 A canopy stomatal resistance model for gaseous deposition to vegetated surfaces

D. L. Savoie, J. M. Prospero and R. T. Nees — 103 Washout ratios of nitrate, non-sea-salt sulfate and sea-salt on Virginia Key, Florida and on American Samoa

M. T. Dana and R. C. Easter — 113 Statistical summary and analyses of event precipitation chemistry from the MAP3S network, 1976–1983

E. R. Altwicker and A. H. Johannes — 129 Spatial and historical trends in acidic deposition: a graphical intersite comparison

J. M. Dasch — 137 On the difference between SO_4^{2-} and NO_3^- in wintertime precipitation

J. J. Feddema and T. C. Meierding — 143 Marble weathering and air pollution in Philadelphia

R. C. Henry — 159 Psychophysics, visibility and perceived atmospheric transparency

B. L. Tracy and D. P. Meyerhof	165	Uranium concentrations in air near a Canadian uranium refinery
D. Midgley	173	Assessment of reference electrodes for use in determining the pH of acidic, poorly-buffered waters
W. Balzer, J. Ettl, K. Reiniger, G. Heinrich and H. Güsten	179	An autonomic station for measuring air pollutants in remote areas
H. Mukai and Y. Ambe	185	Detection of monomethylarsenic compounds originating from pesticide in airborne particulate matter sampled in an agricultural area in Japan
M. L. Riba, J. P. Tathy, N. Tsiropoulos, B. Monsarrat and L. Torres	191	Diurnal variation in the concentration of α- and β-pinene in the Landes Forest (France)
B. E. A. Fisher and R. Smith	195	Expanding box models for the long-range transport of chemically reacting airborne material
J.-Y. Ku, S. T. Rao and K. S. Rao	201	Numerical simulation of air pollution in urban areas: model development
J.-Y. Ku, S. T. Rao and K. S. Rao	213	Numerical simulation of air pollution in urban areas: model performance
T. W. Tesche, J. L. Haney and R. E. Morris	233	Performance evaluation of four grid-based dispersion models in complex terrain
Discussions		
D. H. Lowenthal, K. A. Rahn, G. D. Thurston and J. D. Spengler	257	A quantitative assessment of source contributions to inhalable particulate matter pollution in metropolitan Boston
R. A. Sommerfeld, D. Lamb, S. H. Cadle, J. M. Dasch and P. A. Mulawa	260	Atmospheric concentrations and the deposition velocity to snow of nitric acid, sulfur dioxide and various particulate species
D. M. Leahey, D. Skibin and J. A. Businger	261	The vertical extent of the log-linear wind profile under stable stratification
R. Williams, H. Sievering and D. M. Leahey	262	Gradient measurements of sulfur and soil mass dry deposition rates under clean air and high wind speed conditions
Book Reviews		
J. P. Lodge, Jr	267	
Erratum	273	
Announcements	275	
Preparation of Papers	i	

Number 2

B. P. Leaderer — 279 Foreword

Session I
W. G. Tucker — 281 Chairman's Summary, Session I. Characterization of emissions from combustion sources: controlled studies

D. J. Moschandreas, S. M. Relwani, I. H. Billick and R. A. Macriss — 285 Emission rates from range-top burners—assessment of measurement methods

M. R. Guerin, C. E. Higgins and R. A. Jenkins — 291 Measuring environmental emissions from tobacco combustion: sidestream cigarette smoke literature review

J. E. Borrazzo, J. F. Osborn, R. C. Fortmann, R. L. Keefer and C. I. Davidson — 299 Modeling and monitoring of CO, NO and NO_2 in a modern townhouse

Session II
L. Mølhave — 313 Chairman's Summary, Session II. Characterization of emissions from building materials, building occupants and consumer products: laboratory studies

J. R. Girman, A. T. Hodgson and M. L. Wind — 315 Considerations in evaluating emissions from consumer products

T. G. Matthews — 321 Environmental chamber test methodology for characterizing organic vapors from solid emission sources

R. G. Merrill, R. S. Steiber, R. F. Martz and L. H. Nelms — 331 Screening methods for the identification of organic emissions from indoor air pollution sources

D. C. Sanchez, M. Mason and C. Norris — 337 Methods and results of characterization of organic emissions from an indoor material

W. S. Cain, T. Tosun, L.-C. See and B. Leaderer — 347 Environmental tobacco smoke: sensory reactions of occupants

A. L. Blackard — 355 Automation of an emissions testing facility

Session III
D. T. Grimsrud — 359 Chairman's Summary, Session III. Characterization of sources and emissions in field studies

B. P. Leaderer, R. T. Zagraniski, M. Berwick and J. A. J. Stolwijk — 361 Predicting NO_2 levels in residences based upon sources and source use: a multivariate model

D. P. Harlos, M. Marbury, J. Samet and J. D. Spengler — 369 Relating indoor NO_2 levels to infant personal exposures

G. W. Traynor — 377 Field monitoring design considerations for assessing indoor exposures to combustion pollutants

L. A. Wallace, E. Pellizzari, B. Leaderer, H. Zelon and L. Sheldon — 385 Emissions of volatile organic compounds from building materials and consumer products

B. Seifert and D. Ullrich — 395 Methodologies for evaluating sources of volatile organic chemicals (VOC) in homes

Session IV
J. A. J. Stolwijk — 405 Chairman's Summary, Session IV. Modeling of source emissions

K. Sexton and S. B. Hayward — 407 Source apportionment of indoor air pollution

A. R. Hawthorne and T. G. Matthews — 419 Models for estimating organic emissions from building materials: formaldehyde example

J. E. Dunn — 425 Models and statistical methods for gaseous emission testing of finite sources in well-mixed chambers

R. G. Sextro — 431 Understanding the origin of radon indoors—building a predictive capability

Session V
H. Knöppel — 439 Chairman's Summary, Session V. Sampling and analysis: chamber and field studies

J. Lewtas, S. Goto, K. Williams, J. C. Chuang, B. A. Petersen and N. K. Wilson — 443 The mutagenicity of indoor air particles in a residential pilot field study: application and evaluation of new methodologies

H. A. Burge and W. R. Solomon — 451 Sampling and analysis of biological aerosols

S. K. Hammond, B. P. Leaderer, A. C. Roche and M. Schenker — 457 Collection and analysis of nicotine as a marker for environmental tobacco smoke

Number 3

M. Kavanaugh — 463 Estimates of future CO, N_2O and NO_x emissions from energy combustion

Y. K. Jang and J. W. Kim — 469 Total SO_2 emission control strategies for the management of air pollution in Ulsan industrial complex

R. M. Ott, T. K. L. Wu and J. W. Crowder — 479 Modeling of surface tension effects in venturi scrubbing

G. Gross, H. Vogel and F. Wippermann — 483 Dispersion over and around a steep obstacle for varying thermal stratification—numerical simulations

R. R. Draxler — 491 Accuracy of various diffusion and stability schemes over Washington, D.C.

D. H. Lowenthal, R. C. Hanumara, K. A. Rahn and L. A. Currie — 501 Effects of systematic error, estimates and uncertainties in chemical mass balance apportionments: Quail Roost II revisited

P. Karamchandani and L. K. Peters — 511 Three-dimensional behavior of mixing-limited chemistry in the atmosphere

C. S. Stevens — 523 Ozone formation in the Greater Johannesburg region

E. G. Chapman, D. J. Luecken, M. T. Dana, R. C. Easter, J. M. Hales, N. S. Laulainen and J. M. Thorp	531	Inter-storm comparisons from the OSCAR high density network experiment
L. S. Quindos, A. Bonet, N. Diaz-Caneja, P. L. Fernandez, I. Gutierrez, J. R. Solana, J. Soto and E. Villar	551	Study of the environmental variables affecting the natural preservation of the Altamira Cave paintings located at Santillana del Mar, Spain
A. S. Lefohn and V. C. Runeckles	561	Establishing standards to protect vegetation—ozone exposure/dose considerations
S. Madronich	569	Intercomparison of NO_2 photodissociation and u.v. radiometer measurements
P. B. Shepson, T. E. Kleindienst and H. B. McElhoe	579	A cryogenic trap/porous polymer sampling technique for the quantitative determination of ambient volatile organic compound concentrations
J. L. Durham, L. L. Spiller and T. G. Ellestad	589	Nitric acid–nitrate aerosol measurements by a diffusion denuder: a performance evaluation
S. H. Cadle and P. A. Mulawa	599	The retention of SO_2 by nylon filters
J. F. Meagher, N. T. Lee, R. J. Valente and W. J. Parkhurst	605	Rural ozone in the southeastern United States
K. E. Thrane	617	Ambient air concentrations of polycyclic aromatic hydrocarbons, fluoride, suspended particles and particulate carbon in areas near aluminum production plants
A. C. Davison and M. W. Hemphill	629	On the statistical analysis of ambient ozone data when measurements are missing
T. F. Bidleman, U. Wideqvist, B. Jansson and R. Söderlund	641	Organochlorine pesticides and polychlorinated biphenyls in the atmosphere of southern Sweden
O. Røyset and Y. Thomassen	655	Presence of alkyllead in rural and urban air: evaluation of some sources of alkyllead pollution of the atmosphere in Norway
A. S. Lefohn, W. E. Hogsett and D. T. Tingey	659	The development of sulfur dioxide and ozone exposure profiles that mimic ambient conditions in the rural southeastern United States
A. Lopez, S. Prieur, J. Fontan and M. O. Barthomeuf	671	Modélisation de la chimie d'une couche limite atmosphérique non polluée. Influence des hydrocarbures naturels emis par la végétation
G. D. Thurston and P. J. Lioy	687	Receptor modeling and aerosol transport
C. Bellver	699	Influence of particulate pollution on the positions of neutral points in the sky at Seville (Spain)
M. J. Weissbluth, J. M. Davis and S. K. Cox	703	A modeling study of visibility in the Grand Canyon

Technical Note
S. J. Vermette and J. J. Drake 715 Simplified wet-only and sequential fraction rain collector

Short Communication
V. C. Runeckles and K. Palmer 717 Pretreatment with nitrogen dioxide modifies plant response to ozone

Book Reviews
C. N. Davies and J. P. Lodge, Jr 721

Preliminary Communication
R. F. Wright and B. J. Cosby 727 Use of a process-oriented model to predict acidification at manipulated catchments in Norway

Erratum 731

Announcements 733

Number 4

R. M. Harrison, J. P. Lodge, Jr and D. J. Moore i Editorial

W. H. Snyder and R. E. Britter 735 A wind tunnel study of the flow structure and dispersion from sources upwind of three-dimensional hills

S. P. S. Arya, M. E. Capuano and L. C. Fagen 753 Some fluid modeling studies of flow and dispersion over two-dimensional low hills

P. Schreurs and J. Mewis 765 Development of a transport phenomena model for accidental releases of heavy gases in an industrial environment

D. M. Leahey and M. B. Schroeder 777 Observations and predictions of jet diffusion flame behaviour

T. Kitada 785 Effect of non-zero divergence wind fields on atmospheric transport calculations

R. W. Derksen and P. J. Sullivan 789 Deriving contaminant concentration fluctuations from time-averaged records

C. S. Stevens 799 The $NO/NO_2/O_3$ photostationary state and rate of photolysis of NO_2 in central Johannesburg

P. Saxena and C. Seigneur 807 On the oxidation of SO_2 to sulfate in atmospheric aerosols

A. J. S. Tang, D. Yap, J. Kurtz, W. H. Chan and M. A. Lusis 813 An analysis of the impact of the Sudbury smelters on wet and dry deposition in Ontario

B. Singh, M. Nobert and P. Zwack 825 Rainfall acidity as related to meteorological parameters in Northern Quebec

T. H. E. Heaton 843 $^{15}N/^{14}N$ ratios of nitrate and ammonium in rain at Pretoria, South Africa

M. Tranter, T. D. Davies, P. W. Abrahams, I. Blackwood, P. Brimblecombe and C. E. Vincent — 853 Spatial variability in the chemical composition of snowcover in a small, remote, Scottish catchment

P. A. Mayewski, M. J. Spencer, W. B. Lyons and M. S. Twickler — 863 Seasonal and spatial trends in south Greenland snow chemistry

C. I. Davidson, R. E. Honrath, J. B. Kadane, R. S. Tsay, P. A. Mayewski, W. B. Lyons and N. Z. Heidam — 871 The scavenging of atmospheric sulfate by Arctic snow

J. P. Butler, T. J. Kneip and J. M. Daisey — 883 An investigation of interurban variations in the chemical composition and mutagenic activity of airborne particulate organic matter using an integrated chemical class/bioassay system

B. Daube, Jr, K. D. Kimball, P. A. Lamar and K. C. Weathers — 893 Two new ground-level cloud water sampler designs which reduce rain contamination

C. J. Brennan and M. E. Peden — 901 Theory and practice in the electrometric determination of pH in precipitation

M. Alei, J. H. Cappis, M. M. Fowler, D. J. Frank, M. Goldblatt, P. R. Guthals, A. S. Mason, T. R. Mills, E. J. Mroz, T. L. Norris, R. E. Perrin, J. Poths, D. J. Rokop and W. R. Shields — 909 Determination of deuterated methanes for use as atmospheric tracers

M. Kunugi, T. Mizoguchi, I. Kanazawa, K. Hirose and Y. Dokiya — 917 Vertical distributions of suspended particles and their components as measured on a meteorological observation tower

T. Inoue, M. Hoshi and M. Taguri — 929 Stability of two prediction schemes for hourly nitrogen oxide concentrations by a regression model

C. Pilinis, J. H. Seinfeld and C. Seigneur — 943 Mathematical modeling of the dynamics of multicomponent atmospheric aerosols

J. E. Penner and W. M. Porch — 957 Coagulation in smoke plumes after a nuclear war

C. B. Richardson and R. L. Hightower — 971 Evaporation of ammonium nitrate particles

A. Trier and C. Silva — 977 Inhalable urban atmospheric particulate matter in a semi-arid climate: the case of Santiago de Chile

Short Communications

G. E. Shaw — 985 Aerosols as climate regulators: a climate–biosphere linkage?

W. Z. de Mello, D. J. Cooper, W. J. Cooper, E. S. Saltzman, R. G. Zika, D. L. Savoie and J. M. Prospero — 987 Spatial and diel variability in the emissions of some biogenic sulfur compounds from a Florida *Spartina alterniflora* coastal zone

Technical Note

D. F. Miller, D. Lamb and A. W. Gertler — 991 SO_2 oxidation in cloud drops containing NaCl or sea salt as condensation nuclei

Book Reviews
J. P. Lodge, Jr and C. N. Davies 995

Preliminary Communication
M. Dangler, S. Burke, S. V. Hering and D. T. Allen 1001 A direct FTIR method for identifying functional groups, in size segregated atmospheric aerosols

Erratum 1005

Announcement 1007

New Patents i

Number 5

E. Buijsman, H. F. M. Maas and W. A. H. Asman 1009 Anthropogenic NH_3 emissions in Europe

A. P. Altshuller 1023 Relationships between direction of wind flow and fine particle sulfur concentrations within and upwind of St Louis, MO

V. A. Dutkiewicz, P. P. Parekh and L. Husain 1033 An evaluation of regional elemental signatures relevant to the northeastern United States

A. Andrén 1045 A combined first-order closure/Gaussian dispersion model

M. Mulholland and M. R. Jury 1059 System design for a real-time atmospheric dispersion model

A. M. Hough 1073 A computer modelling study of the chemistry occurring during cloud formation over hills

A. P. Altshuller 1097 Potential contribution of sulfate production in cumulus cloud droplets to ground level particle sulfur concentrations

C. J. Walcek and J. S. Chang 1107 A theoretical assessment of pollutant deposition to individual land types during a regional-scale acid deposition episode

A. G. Clarke and M. Radojevic 1115 Oxidation of SO_2 in rainwater and its role in acid rain chemistry

P. A. Clark, B. E. A. Fisher and R. A. Scriven 1125 The wet deposition of sulphate and its relationship to sulphur dioxide emissions

L. A. Barrie, S. E. Lindberg, W. H. Chan, H. B. Ross, R. Arimoto and T. M. Church 1133 On the concentration of trace metals in precipitation

L. T. Khemani, G. A. Momin, M. S. Naik, P. S. Prakasa Rao, P. D. Safai and A. S. R. Murty 1137 Influence of alkaline particulates on pH of cloud and rain water in India

J. L. Colin, J. L. Jaffrezo, J. Pinart and S. Roulette-Cadene 1147 Sequential sampling of snow in a rural area. Experimentation and identification of the acidifying agents

V. R. Smith — 1159 — Chemical composition of precipitation at Marion Island (sub-Antarctic)

H. Pyysalo, J. Tuominen, K. Wickström, E. Skyttä, L. Tikkanen, S. Salomaa, M. Sorsa, T. Nurmela, T. Mattila and V. Pohjola — 1167 — Polycyclic organic material (POM) in urban air. Fractionation, chemical analysis and genotoxicity of particulate and vapour phases in an industrial town in Finland

K. Okazaki, R. W. Wiener and K. Willeke — 1181 — The combined effect of aspiration and transmission on aerosol sampling accuracy for horizontal isoaxial sampling

W. R. Cofer, III, G. Garland Lala and J. P. Wightman — 1187 — Analysis of mid-tropospheric space shuttle exhausted aluminum oxide particles

C. F. Boutron, C. C. Patterson, V. N. Petrov and N. I. Barkov — 1197 — Preliminary data on changes of lead concentrations in Antarctic ice from 155,000 to 26,000 years BP

N. Z. Heidam — 1203 — Bootstrap estimates of factor model variability

L. I. Kleinman — 1219 — Source–receptor relations from nonlinear atmospheric models

Short Communications

D. M. Leahey and M. C. Hansen — 1227 — Observations of winds above and below a forest canopy located near a clearing

P. H. McMurry and M. R. Stolzenburg — 1231 — Mass accommodation coefficients from penetration measurements in laminar tube flow

Technical Note

E. Schnug and F. Holz — 1235 — Deposition of nitrate–N and sulfate–S by precipitations in Schleswig-Holstein

Letter to the Editors

C. A. Pio and R. M. Harrison — 1243 — The equilibrium of ammonium chloride aerosol with gaseous hydrochloric acid and ammonia under tropospheric conditions

Discussions

R. P. Turco, O. B. Toon, T. P. Ackerman, W. Porch, J. Penner and D. Gillette — 1247 — Parametric study of wind generated super-μm particle effects in large fires

M. R. Beychok — 1253 — Polynuclear aromatic compounds in flue gases and ambient air in the vicinity of a municipal incineration plant

Book Reviews

J. P. Lodge, Jr — 1255

Announcement — 1257

Number 6

B. S. Negi, S. Sadasivan and U. C. Mishra — 1259 — Aerosol composition and sources in urban areas in India

P. P. Parekh, B. Ghauri, Z. R. Siddiqi and L. Husain	1267	The use of chemical and statistical methods to identify sources of selected elements in ambient air aerosols in Karachi, Pakistan
B. Schneider	1275	Source characterization for atmospheric trace metals over Kiel Bight
D. J. Gaffen, C. Benocci and D. Olivari	1285	Numerical modeling of buoyancy dominated dispersal using a Lagrangian approach
S. Okamoto	1295	Turbulent shear flow behind a single row of bluff obstacles placed on plane boundary
D. J. Jacob, F. H. Shair, J. M. Waldman, J. W. Munger and M. R. Hoffmann	1305	Transport and oxidation of SO_2 in a stagnant foggy valley
F. A. Gifford	1315	The time-scale of atmospheric diffusion considered in relation to the universal diffusion function, f_1
S. T. Brown	1321	Concentration prediction for meandering plumes based on probability theory
E. Joos, A. Mendonça and C. Seigneur	1331	Evaluation of a reactive plume model with power plant plume data—application to the sensitivity analysis of sulfate and nitrate formation
T. Y. Chang, G. Kuntasal and W. R. Pierson	1345	Night-time N_2O_5/NO_3 chemistry and nitrate in dew water
G. H. Wagner and K. F. Steele	1353	Rain chemistry at a midcontinent site, U.S.A., 1980–1984
S. Belviso, N. Mihalopoulos and B. C. Nguyen	1363	The supersaturation of carbonyl sulfide (OCS) in rain waters
T. J. Stohlgren and D. J. Parsons	1369	Variation of wet deposition chemistry in Sequoia National Park, California
B. Campistron	1375	Interaction between a natural snowfall and a cooling tower plume: an experimental study with a millimetric Doppler radar
J. E. Sickles, II and R. M. Michie	1385	Evaluation of the performance of sulfation and nitration plates
J. Langstaff, C. Seigneur, M.-K. Liu, J. Behar and J. L. McElroy	1393	Design of an optimum air monitoring network for exposure assessments
M. A. Thorsen and L. Mølhave	1411	Elements of a standard protocol for measurements in the indoor atmospheric environment
R. S. Scorer	1417	Ship trails
R. S. Scorer	1427	Hot spots and plumes: observation by meteorological satellite
J. Arey, B. Zielinska, R. Atkinson and A. M. Winer	1437	Polycyclic aromatic hydrocarbon and nitroarene concentrations in ambient air during a wintertime high-NO_x episode in the Los Angeles Basin
R. G. Derwent	1445	Treating uncertainty in models of the atmospheric chemistry of nitrogen compounds

A. D. Clarke, K. J. Noone, J. Heintzenberg, S. G. Warren and D. S. Covert — 1455 — Aerosol light absorption measurement techniques: analysis and intercomparisons

Short Communications

C. Ronneau, J. Cara and D. Apers — 1467 — The deposition of radionuclides from Chernobyl to a forest in Belgium

Y. Ambe and M. Nishikawa — 1469 — Variations in different sized water insoluble particulate matter in rain water

Technical Note

D. B. Orr, J. C. Hipfner, W. H. Chan, M. A. Lusis and J. E. Hunt — 1473 — The application of a passive permeation device for the measurement of ambient sulfur dioxide

Letters to the Editors

C. Bellver — 1477 — Study of luminance and polarimetry of the sky at Seville (Spain) from May 1982 to September 1984

M. Ilyas — 1483 — Effect of cloudiness on solar ultraviolet radiation reaching the surface

Discussion

L. R. Martin — 1485 — On the kinetics and mechanism of oxidation of aquated sulfur dioxide by ozone

Preliminary Communication

L. R. Martin and M. W. Hill — 1487 — The iron catalyzed oxidation of sulfur: reconciliation of the literature rates

Number 7

W. J. Cooper, D. J. Cooper, E. S. Saltzman, W. Z. de Mello, D. L. Savoie, R. G. Zika and J. M. Prospero — 1491 — Emissions of biogenic sulphur compounds from several wetland soils in Florida

P. Middleton — 1497 — Analysis of emission databases for regional models

P. Koutrakis and J. D. Spengler — 1511 — Source apportionment of ambient particles in Steubenville, OH using Specific Rotation Factor Analysis

M. L. Sanchez Gomez and M. C. Ramos Martín — 1521 — Application of cluster analysis to identify sources of airborne particles

R. Svensson, E. Ljungström and O. Lindqvist — 1529 — Kinetics of the reaction between nitrogen dioxide and water vapour

K. Izumi, M. Mizuochi, K. Murano and T. Fukuyama — 1541 — Humidity effects on photochemical aerosol formation in the SO_2–NO–C_3H_6– air system

T. Ibusuki and K. Takeuchi — 1555 — Sulfur dioxide oxidation by oxygen catalyzed by mixtures of manganese(II) and iron(III) in aqueous solutions at environmental reaction conditions

K. W. Nicholson and T. D. Davies	1561	Field measurements of the dry deposition of particulate sulphate
B. Y. Underwood	1573	Dry deposition to a uniform canopy: evaluation of a first-order-closure mathematical model
G. A. Isaac and P. H. Daum	1587	A winter study of air, cloud and precipitation chemistry in Ontario, Canada
S. M. Jaynes and R. U. Cooke	1601	Stone weathering in southeast England
D. J. Szepesi and K. E. Fekete	1623	Background levels of air and precipitation quality for Europe
M. Luria, C. C. Van Valin, J. F. Boatman, D. L. Wellman and R. F. Pueschel	1631	Sulfur dioxide flux measurements over the Western Atlantic Ocean
Z. Vukmirović, D. Spasova, D. Marković, D. Veselinović, D. Vukmirović, Č. Stanojević, M. Popović and A. Hadžipavlović	1637	Some characteristics of oxidant occurrence in the atmosphere of Belgrade
R. Del Delumyea and A. Kalivretenos	1643	Elemental carbon and lead content of fine particles from American and French cities of comparable size and industry, 1985
D. A. Saucy, J. R. Anderson and P. R. Buseck	1649	Cluster analysis applied to atmospheric aerosol samples from the Norwegian Arctic
D. L. Savoie, J. M. Prospero and R. T. Nees	1659	Frequency distribution of dust concentration in Barbados as a function of averaging time
J. S. Foot and M. J. Leeson	1665	Aerosol single-scattering albedo: a method for obtaining climatological data
Technical Note		
K. Himberg, H. Pyysalo, A. Päällysaho and V. Väätäinen	1671	Composition of sulphurous exhaust gases from sulphate and semi-alkaline pulping (SAP) processes of a pulp mill
Discussions		
R. W. Shaw	1675	Towards a targetted emission reduction in Europe
M. Benarie, I. Colbeck and R. M. Harrison	1676	The atmospheric effects of nuclear war—a review
L. I. Kleinman, M.-S. Hong and G. R. Carmichael	1677	Examination of a subgrid-scale parameterization for the transport of pollutants in a non-precipitating cumulus cloud ensemble
G. Langer	1679	Uranium concentrations in air near a Canadian uranium refinery
Book Reviews		
J. P. Lodge, Jr	1681	
Preparation of Papers	i	

Number 8

Review Article
R. P. Wayne — 1683 — The photochemistry of ozone

General Papers
B. Lamb, A. Guenther, D. Gay and H. Westberg — 1695 — A national inventory of biogenic hydrocarbon emissions

P. P. Parekh and L. Husain — 1707 — Fe/Mg ratio: a signature for local coal-fired power plants

M. Schatzmann, A. Lohmeyer and G. Ortner — 1713 — Flue gas discharge from cooling towers. Wind tunnel investigation of building downwash effects on ground-level concentrations

G. E. Willis and J. W. Deardorff — 1725 — Buoyant plume dispersion and inversion entrapment in and above a laboratory mixed layer

S. Barr and F. A. Gifford — 1737 — The random force theory applied to regional scale tropospheric diffusion

R. E. Huie and P. Neta — 1743 — Rate constants for some oxidations of S(IV) by radicals in aqueous solutions

A. Bytnerowicz, P. R. Miller and D. M. Olszyk — 1749 — Dry deposition of nitrate, ammonium and sulfate to a *Ceanothus crassifolius* canopy and surrogate surfaces

L. W. A. van Hove, A. J. Koops, E. H. Adema, W. J. Vredenberg and G. A. Pieters — 1759 — Analysis of the uptake of atmospheric ammonia by leaves of *Phaseolus vulgaris* L.

D. Lamb and R. Blumenstein — 1765 — Measurement of the entrapment of sulfur dioxide by rime ice

K. Suzuki — 1773 — Spatial distribution of chloride and sulfate in the snow cover in Sapporo, Japan

X. Q. Zhang and P. H. McMurry — 1779 — Theoretical analysis of evaporative losses from impactor and filter deposits

H. Sakugawa and I. R. Kaplan — 1791 — Atmospheric H_2O_2 measurement: comparison of cold trap method with impinger bubbling method

M. Ilyas — 1799 — Equatorial measurements of surface ozone

A. Bytnerowicz, P. R. Miller, D. M. Olszyk, P. J. Dawson and C. A. Fox — 1805 — Gaseous and particulate air pollution in the San Gabriel Mountains of southern California

R. C. Henry — 1815 — Current factor analysis receptor models are ill-posed

M. T. Morandi, J. M. Daisey and P. J. Lioy — 1821 — Development of a modified factor analysis/ multiple regression model to apportion suspended particulate matter in a complex urban airshed

S. K. Hati and R. G. Lamb 1833 An application of game theory in the design of optimal air pollution control measures

P. G. Surman, J. Bodero and R. W. Simpson 1843 The prediction of the numbers of violations of standards and the frequency of air pollution episodes using extreme value theory

D. J. Moore 1849 Conditions in which power stations contribute to high ground level SO_2 concentrations in the U.K.

Technical Note
K. Al-Jamal, S. Ayyash, M. Rasas, S. Al-Aruri and N. Shaban 1855 Atmospheric turbidity in Kuwait

Short Communication
Y. Mamane 1861 Air pollution control in Israel during the first and second century

Discussions
S. E. Schwartz, D. A. Hegg and P. V. Hobbs 1865 Sulfate and nitrate chemistry in cumuliform clouds

M. R. Beychok, D. M. Leahey and M. B. Schroeder 1868 Observations and predictions of jet diffusion flame behaviour

H. Horvath, J. Gorraiz and R. C. Henry 1869 Psychophysics, visibility and perceived atmospheric transparency

D. H. Stedman, J. L. Durham, T. G. Ellestad and L. L. Spiller 1870 Nitric acid-nitrate aerosol measurements by a diffusion denuder: a performance evaluation

Book Reviews
J. P. Lodge, Jr 1871

Announcement 1875

Number 9

D. Kronborg, F. Palmgren Jensen, K. Keiding and N. Z. Heidam 1877 Determination of sources of atmospheric aerosol in Copenhagen based on receptor models

S. Borrmann and R. Jaenicke 1891 Wind tunnel experiments on the resuspension of sub-micrometer particles from a sand surface

D. P. H. Laxen and E. Noordally 1899 Nitrogen dioxide distribution in street canyons

R. W. Arritt, R. T. McNider and R. A. Pielke 1905 Numerical model evaluation of the extension of the critical dividing streamline hypothesis to mesoscale two-dimensional terrain

K. Higuchi, N. B. A. Trivett and S. M. Daggupaty 1915 A preliminary climatology of trajectories related to atmospheric CO_2 measurements at Alert and Mould Bay

J. S. Irwin, S. T. Rao, W. B. Petersen and D. B. Turner 1927 Relating error bounds for maximum concentration estimates to diffusion meteorology uncertainty

H. M. ApSimon, M. Kruse and J. N. B. Bell	1939	Ammonia emissions and their role in acid deposition
D. L. Ames, L. E. Roberts and A. H. Webb	1947	An automatic rain gauge for continuous, real time determination of rainwater chemistry
K. E. Thrane, T. Aune, E. Søderlund, K. Tveito Aune, J. Hongslo and M. Møller	1957	Mutagenicity of ambient air pollutants collected near aluminum industries
K. E. Muller and C. N. Barton	1963	A nonlinear version of the Coburn, Forster and Kane model of blood carboxyhemoglobin
J. E. Davenport and H. B. Singh	1969	Systematic development of reactive tracer technology to determine hydroxyl radical concentrations in the troposphere
S. O. Farwell, R. A. Kagel, C. J. Barinaga, P. D. Goldan, W. C. Kuster, F. C. Fehsenfeld and D. L. Albritton	1983	Intercomparison of two techniques for the preparation of gaseous sulfur calibration standards in the low to sub-ppb range
Y. Mamane and M. Mehler	1989	On the nature of nitrate particles in a coastal urban area
T. D. Hartwell, E. D. Pellizzari, R. L. Perritt, R. W. Whitmore, H. S. Zelon, L. S. Sheldon, C. M. Sparacino and L. Wallace	1995	Results from the Total Exposure Assessment Methodology (TEAM) study in selected communities in Northern and Southern California
D. H. Lowenthal and K. A. Rahn	2005	Application of the factor-analysis receptor model to simulated urban- and regional-scale data sets
A. M. Hough and R. G. Derwent	2015	Computer modelling studies of the distribution of photochemical ozone production between different hydrocarbons
H. M. ten Brink, S. E. Schwartz and P. H. Daum	2035	Efficient scavenging of aerosol sulfate by liquid-water clouds
Short Communication		
K. Kaneko, S. Ozeki and K. Inouye	2053	Dynamic NO adsorption characteristics of iron-treated activated carbon fibers
Letter to the Editors		
J. Halkiewicz, H. Lamparczyk, J. Grzybowski and A. Radecki	2057	On the aliphatic and polycyclic aromatic hydrocarbon levels in the southern Baltic Sea atmosphere
Further Discussion		
R. P. Turco, O. B. Toon, T. P. Ackerman, W. Porch, J. Penner and D. Gillette	2065	Parametric study of wind generated supermicron particle effects in large fires
Book Reviews		
J. P. Lodge, Jr	2069	
Erratum	2073	
Announcements	2075	

Number 10

Publisher's Announcement	i	
J. Baugh, W. Ray, F. Black and R. Snow	2077	Motor vehicle emissions under reduced ambient temperature idle operating conditions
R. Krishnamurthy and J. G. Hall	2083	Numerical and approximate solutions for plume rise
R. S. Thompson and R. E. Eskridge	2091	Turbulent diffusion behind vehicles: experimentally determined influence of vortex pair in vehicle wake
W. A. H. Asman and A. J. Janssen	2099	A long-range transport model for ammonia and ammonium for Europe
J. Alcamo and J. Bartnicki	2121	A framework for error analysis of a long-range transport model with emphasis on parameter uncertainty
J. Lelieveld, F. W. Jansen and J. F. den Tonkelaar	2133	Assessment of transboundary mass fluxes of air pollutants by aircraft measurements: a preliminary survey with reference to a case study
S. Okamoto and K. Shiozawa	2145	A trajectory plume model for simulating air pollution transients
S. R. Hanna and R. J. Paine	2153	Convective scaling applied to diffusion of buoyant plumes from tall stacks
N. A. Kelly	2163	The photochemical formation and fate of nitric acid in the metropolitan Detroit area: ambient, captive-air irradiation and modeling results
H. Sievering	2179	Small-particle dry deposition under high wind speed conditions: eddy flux measurements at the Boulder Atmospheric Observatory
M. Tancrède, R. Wilson, L. Zeise and E. A. C. Crouch	2187	The carcinogenic risk of some organic vapors indoors: a theoretical survey
H. Hartkamp and P. Bachhausen	2207	A method for the determination of hydrogen peroxide in air
G. Ancellet, G. Megie, J. Pelon, R. Capitini and D. Renaut	2215	Lidar measurements of sulfur dioxide and ozone in the boundary layer during the 1983 Fos Berre campaign
E. Sanhueza, A. Rondón and J. Romero	2227	Airborne particles in the Venezuelan savannah during burning and non-burning periods
C. G. Kilsby and M. H. Smith	2233	Comparisons of the physical and optical properties of atmospheric aerosol from airborne and surface measurements on the East coast of England
M. A. Sicre, J. C. Marty, A. Saliot, X. Aparicio, J. Grimalt and J. Albaiges	2247	Aliphatic and aromatic hydrocarbons in different sized aerosols over the Mediterranean Sea: occurrence and origin

Discussions
R. Atkinson, J. Arey, B. Zielinska, J. N. Pitts, Jr and A. M. Winer — 2261 — Evidence for the transformation of polycyclic organic matter in the atmosphere

P. G. Georgopoulos, J. H. Seinfeld, P. Karamchandani and L. K. Peters — 2262 — Three-dimensional behavior of mixing limited chemistry in the atmosphere

Book Reviews
J. P. Lodge, Jr and R. M. Harrison — 2265

Preliminary Communication
L. R. Martin and M. W. Hill — 2267 — The effect of ionic strength on the manganese catalyzed oxidation of sulfur (IV)

Announcements — 2271

Number 11

Editorial
M. M. Benarie — 2273 — Parochialism in referencing

Review Article
J. F. Pankow — 2275 — Review and comparative analysis of the theories on partitioning between the gas and aerosol particulate phases in the atmosphere

General Papers
G. Helas, A. Broll, K.-J. Rumpel and P. Warneck — 2285 — On the origins of night-time NO at a rural measurement site

H. F. Lins — 2297 — Trend analysis of monthly sulfur dioxide emissions in the conterminous United States, 1975–1984

D. R. Johnstone, J. F. Cooper and H. M. Dobson — 2311 — The availability and fall-out of an insecticidal aerosol dispersed from aircraft during operations for control of tsetse fly in Zimbabwe

R. Atkinson and S. M. Aschmann — 2323 — Kinetics of the gas-phase reactions of alkylnaphthalenes with O_3, N_2O_5 and OH radicals at 298 ± 2 K

T. R. Zacharewski, E. A. Cherniak and W. H. Schroeder — 2327 — FTIR investigation of the heterogeneous reaction of HgO(s) with SO_2(g) at ambient temperature

D. Lamb, D. F. Miller, N. F. Robinson and A. W. Gertler — 2333 — The importance of liquid water concentration in the atmospheric oxidation of SO_2

A. Tremblay — 2345 — Cumulus cloud transport, scavenging and chemistry: observations and simulations

C. A. Johnson, L. Sigg and J. Zobrist — 2365 — Case studies on the chemical composition of fogwater: the influence of local gaseous emissions

C. L. Blanchard and M. R. Stromberg — 2375 — Acidic precipitation in southeastern Arizona: sulfate, nitrate and trace-metal deposition

B. Moldan, M. Veselý and A. Bartoňová — 2383 Chemical composition of atmospheric precipitation in Czechoslovakia, 1976–1984—I. Monthly samples

L. J. Herlihy, J. N. Galloway and A. L. Mills — 2397 Bacterial utilization of formic and acetic acid in rainwater

M. Radojević and R. M. Harrison — 2403 Concentrations, speciation and decomposition of organolead compounds in rainwater

T. D. Hartwell, E. D. Pellizzari, R. L. Perritt, R. W. Whitmore, H. S. Zelon and L. Wallace — 2413 Comparison of volatile organic levels between sites and seasons for the Total Exposure Assessment Methodology (TEAM) study

L. A. Leysen, E. J. Roekens, H. Storms and R. E. Van Grieken — 2425 Classification of suspended particles in deposition samples and run-off water samples from a limestone cathedral

A. S. Lefohn, C. E. Davis, C. K. Jones, D. T. Tingey and W. E. Hogsett — 2435 Co-occurrence patterns of gaseous air pollutant pairs at different minimum concentrations in the United States

M. A. K. Khalil and R. A. Rasmussen — 2445 Atmospheric methane: trends over the last 10,000 years

C. Pilinis and J. H. Seinfeld — 2453 Continued development of a general equilibrium model for inorganic multicomponent atmospheric aerosols

A. A. Tsonis — 2467 A method for inferring aerosol properties from satellite data over forested terrain

D. J. Moore — 2473 Report on a British council specialist tour to India

Short Communication

N. J. Pattenden and J. R. Branson — 2481 Relation between lead in air and in petrol in two urban areas of Britain

Discussion

P. Brimblecombe — 2485 The antiquity of 'smokeless zones'

Book Reviews

J. P. Lodge, Jr — 2487

Announcement — 2489

New Patents — i

Number 12

R. Bornstein — 2491 Editorial

EURASAP Episodes Symposium

Introduction — 2493 International Symposium on Prediction, Monitoring and Control of Urban Air Pollution Episodes with special reference to the severe pollution episode of 14–21 January 1985 over Europe

D. Simpson, S. Davies, B. D. Gooriah and G. McInnes — 2495 — Pollution levels in the United Kingdom during 14–22 January 1985

E. Mészáros, I. Mersich and T. Szentimrey — 2505 — The air pollution episode of January 1985 as revealed by background data measured in Hungary

Report — 2511 — Symposium on Ammonia and Acidification

Announcement — 2513

Denver Chemistry of the Atmosphere Symposium

L. G. Anderson — 2515 — Introduction to the Symposium on the Chemistry of the Atmosphere

J. D. Rogers and L. A. Rhead — 2519 — Peroxyglutaryl nitrate: formation and infrared spectrum

H. Sievering — 2525 — Midwest/western/eastern U.S. precipitation and aerosol sulfate: differences attributable to natural source inputs?

J. N. Pitts, Jr — 2531 — Nitration of gaseous polycyclic aromatic hydrocarbons in simulated and ambient urban atmospheres: a source of mutagenic nitroarenes

R. C. Greaves, R. M. Barkley, R. E. Sievers and R. R. Meglen — 2549 — Covariations in the concentrations of organic compounds associated with springtime atmospheric aerosols

W. H. White and E. S. Macias — 2563 — Particulate nitrate measurements in rural areas of the western United States

General Papers

F. T. M. Nieuwstadt and J. P. J. M. M. de Valk — 2573 — A large eddy simulation of buoyant and non-buoyant plume dispersion in the atmospheric boundary layer

S.-Y. Cho, G. R. Carmichael and H. Rabitz — 2589 — Sensitivity analysis of the atmospheric reaction–diffusion equation

D. S. Wratt — 2599 — An experimental investigation of some methods of estimating turbulence parameters for use in dispersion models

S. S. Ibrahim, R. W. Bilger and N. R. Mudford — 2609 — Turbulence effects on chemical reactions in smog chamber flows

G. T. Wolff, T. M. Church, J. N. Galloway and A. H. Knap — 2623 — An examination of SO_x, NO_x and trace metal washout ratios over the Western Atlantic Ocean

K. R. Sperber — 2629 — The concentration and deposition of nitrate, sulfate and ammonium as a function of wind direction from precipitation samples

J. P. Lacaux, J. Servant and J. G. R. Baudet — 2643 — Acid rain in the tropical forests of the Ivory Coast

C. J. Walcek — 2649 — A theoretical estimate of O_3 and H_2O_2 dry deposition over the northeast United States

E. L. McWilliams and R. L. Sealy	2661	Atmospheric chloride: its implication for foliar uptake and damage
S. F. Watts, A. Watson and P. Brimblecombe	2667	Measurements of the aerosol concentrations of methanesulphonic acid, dimethyl sulphoxide and dimethyl sulphone in the marine atmosphere of the British Isles
F. I. Kanbour, S. Y. Faiq, F. A. Al-Taie, A. M. N. Kitto and N. Bader	2673	Variation of ozone concentrations in the ambient air of Baghdad
D. P. Lalas, M. Tombrou-Tsella, M. Petrakis, D. N. Asimakopoulos and C. Helmis	2681	An experimental study of the horizontal and vertical distribution of ozone over Athens
A. D. Thrall and C. S. Burton	2695	The probability of NAAQS nonattainment when exceedance outcomes constitute a two-state Markov process
W. A. Hoppel	2703	Nucleation in the MSA–water vapor system
C. A. Pio and R. M. Harrison	2711	Vapour pressure of ammonium chloride aerosol: effect of temperature and humidity
K. E. Noll, R. Draftz and K. Y. P. Fang	2717	The composition of atmospheric coarse particles at an urban and non-urban site
Short Communication		
A. S. Ahmed, A. A. Ali and M. A. Alhaider	2723	Measurement of atmospheric particle size distribution during sand/duststorm in Riyadh, Saudi Arabia
Technical Note		
C. Bellver	2727	Measurements of visibility by photographic photometry at Seville (Spain)
Correspondence		
S. F. Watts, R. Yaaqub, T. Davies, D. H. Lowenthal, K. A. Rahn, R. M. Harrison, B. T. Storr and J. L. Baker	2731	The use of Whatman 41 filter papers for high volume aerosol sampling
Discussion		
M. del Monte, C. Sabbioni, Y. Mamane, T. G. Dzubay and J. L. Miller	2737	Characterization of individual fly ash particles emitted from coal- and oil-fired power plants
Book Reviews		
J. P. Lodge, Jr	2739	
New Patents	i	